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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,010	08/21/2006	Kenji Tamada	070456-0142	7077

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EXAMINER	
KRAUSE, JUSTIN MITCHELL	
ART UNIT	PAPER NUMBER
3656	
MAIL DATE	DELIVERY MODE
07/02/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,010	TAMADA ET AL.	
	Examiner	Art Unit	
	JUSTIN KRAUSE	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/10/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 8, 2-5 and 9-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 8 recites the range of the value of the arithmetic average roughness Ra of the rolling element to be between .08 and .15 micrometers. There is no disclosure of the significance of .08 micrometers that would provide one of ordinary skill in the art with a rationale for the selection of the lower bound of the range. The end point selected appears to be arbitrary, and applicant does not appear to have possessed the narrower range at the time the invention was made.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, and 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jahn (US Patent 3,240,542) in view of Ikezawa et al (US Patent 5,630,668).

Jahn discloses a thrust needle bearing employing lubricating oil (col. 2, line 69) and having a rolling element (3) held by a cage (4) and rolling on a race (a roller thrust bearing, by definition, operates between a pair of races in order to bear a thrust load) wherein, the cage has a cage pocket (2), in which the rolling element is stored to come in contact with a pocket guide face (6, 6a, 7) thereof constituted by a shear plane formed through pressing the cage pocket (col. 1, lines 35-39), and a clearance (col. 2, lines 56-58) between the pocket guide face of the cage and the rolling element.

Jahn does not disclose a specific clearance dimension, however does disclose the guide surfaces being provided with faces which are closely spaced from the roller (col. 2, lines 56-58) and a clearance be set, "so as to facilitate the entry of wedge-shaped layers of lubricant between the roller and its guide surfaces" (Col. 2, lines 68-69). Therefore, the clearance required to facilitate the entry of wedge-shaped layers of lubricant is a result dependant variable which is determined based upon the oil selected and the desired lubricating properties.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jahn, through the use of routine methods of experimentation and select a clearance range of 60 to 130 micrometers between the pocket guide face and roller for the desired purpose of allowing for a lubricating wedge of lubricant which achieves the desired lubricating characteristics, dependent on the type of lubricant selected, the desired lubricating characteristics and the operational parameters (speed, temperature, etc…) of the bearing device.

Jahn does not disclose a value of the arithmetic average roughness Ra of the rolling element coming into contact with the shear plane to be at least 0.08-0.15 micrometers.

Ikezawa teaches a thrust needle bearing employing lubricating oil having a rolling element (NR) held by a cage (see Fig. 2, for example) and on a rolling race (49, 50, see figure 7, for example), wherein the value of the arithmetic average roughness Ra of the rolling element contacting the cage is a result dependent variable which may be varied and selected to optimize the operational characteristics of the device for the purpose of decreasing friction and reducing wear.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jahn to include a rolling element having an arithmetic average roughness Ra within the claimed range for the purpose of decreasing friction and reducing wear as taught by Ikezawa, as a matter of routine experimentation to optimize the parameters of a result dependant variable. One of ordinary skill would undertake the experimentation and have a reasonable expectation of success.

Regarding claims 2 and 3, Claim 7 of Ikezawa discloses that at least one of the cage, the race and the roller has a roughness of .05 Ra or less, satisfying the claimed ranges.

Regarding claims 4 and 5, the incorporation of the bearing into a particular device or environment is not itself patentable. The structure of the device is the same as disclosed, and may be placed into any environment. See MPEP 2114.

Ikezawa explicitly discloses the bearing is for use in an air conditioner compressor (col. 1, line 21), and the device is also capable of being incorporated into any other device, including an automatic transmission.

Claims 6, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jahn (US Patent 3,240,542).

Jahn discloses a thrust needle bearing employing lubricating oil (col. 2, line 69) and having a rolling element (3) held by a cage (4) and rolling on a race (a roller thrust bearing, by definition, operates between a pair of races in order to bear a thrust load) wherein, the cage has a cage pocket (2), in which the rolling element is stored to come in contact with a pocket guide face (6, 6a) thereof constituted by a shear plane formed through pressing the cage pocket (col. 1, lines 35-39), and a clearance (col. 2, lines 56-58) between the pocket guide face of the cage and the rolling element.

Jahn does not disclose a specific clearance dimension, however does disclose the guide surfaces being provided with faces which are closely spaced from the roller (col. 2, lines 56-58) and a clearance be set, "so as to facilitate the entry of wedge-shaped layers of lubricant between the roller and its guide surfaces" (Col. 2, lines 68-69). Therefore, the clearance required to facilitate the entry of wedge-shaped layers of lubricant is a result dependant variable which is determined based upon the oil selected and the desired lubricating properties.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Jahn, through the use of routine methods of experimentation and select a clearance range of 60 to 130 micrometers between the pocket guide face and roller for the desired purpose of allowing for a lubricating wedge of lubricant which achieves the desired lubricating characteristics, dependent on the type of lubricant selected, the desired lubricating characteristics and the operational parameters (speed, temperature, etc…) of the bearing device.

Regarding claim 7, the cage has a radial section with a shape of a square wave rising and falling in the form of a square between a first level and a second level different from each other in height,

said cage has a portion of said first level at a location corresponding to a radial central portion of said rolling element, and said portion of said first level has a first convex portion which can be contacted with a circumferential surface of said radial central portion of said rolling element,

said cage has portions of said second level at locations respectively corresponding to an inner circumferential side and an outer circumferential side of said radial central portion of said rolling element, and said portions of said second level have second convex portions which can be respectively contacted with end surfaces of the inner and circumferential side of said rolling element (see fig. 5).

Regarding claims 9 and 10, the incorporation of the bearing into a particular device or environment is not itself patentable. The claims recite no particulars of the

structure of the combination, the bearing of Jahn is capable of being incorporated into any device and bringing with it all the advantages of the improved bearing design. See MPEP 2114.

Response to Arguments

Applicant's arguments filed April 15, 2010 have been fully considered but they are not persuasive.

With regard to applicant's argument of unexpected results, applicant's argument is insufficient to establish unexpected results as applicant has not made a showing that the associated comparison has been made with respect to the closest prior art. See MPEP 716.02(e) [R-2]. Further Applicant's data in Table 3 and 4 compare various roughness values against a clearance, and compares various clearances against a roughness. The tables show evidence of routine experimentation to optimize a variable to achieve desired results, not of any unexpected result. It is within the level of skill in the art to optimize variables to achieve desired characteristics. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN KRAUSE whose telephone number is (571)272-3012. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Justin Krause/
Examiner, Art Unit 3656

/Thomas R. Hannon/
Primary Examiner, Art Unit 3656